CDX-65/65RF

SERVICE MANUAL

US Model
Canadian Model
AEP Model
E Model
UK Model

Model Name Using Similar Mechanism	CDX-45
Optical Pic-Up Block Name	KSS-315A

SPECIFICATIONS

System Compact disc digital audio system
Laser Diode Properties
Material: GaAlAs
Wavelength: 780nm
Emission Duration: Continuous
Laser out-put Power: Less than 44.6 µW*
* This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block.
Frequency response
CDX-65 5 – 20,000 Hz
Wow and flutter Below measurable limit
Signal-to-noise ratio
CDX-65 92 dB
Outputs Bus(Unilink) control output (8 PIN)
Analog audio output (RCA PIN)
Current drain 800 mA (CD playback)
800 mA (during loading or ejecting a disc)
Operating temperature
–10°C to 55°C (14°F to 131°F)
Dimensions Approx. 305 × 90 × 174 mm (12 1/8 × 3 5/8 × 6 7/8 in.) (w/h/d) not incl. projecting parts and controls
Mass Approx. 2.5 kg (5 lb. 8 oz.)
Power requirement
12 V DC car battery (negative ground)
Supplied accessories
Disc magazine (1)
Mounting hardware (1 set)
Bus(Unilink) cable (1)
RCA pin cord (1)

Design and specifications subject to change without notice.

CDX-65
COMPACT DISC CHANGER
CDX-65RF
COMPACT DISC CHANGER SYSTEM

SONY®

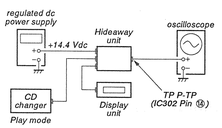
使用時は添付資料も参照のこと
Refer to the additional documents.

HIDEAWAY UNIT

Note: Don't move VR302 on replacing ICs or others.

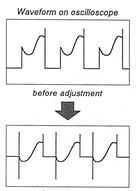
4-3. DC BALANCE ADJUSTMENT

Connection:



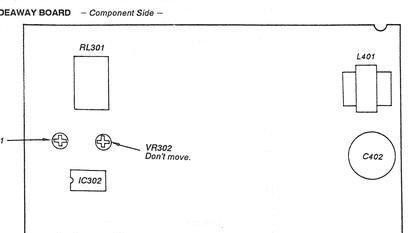
Procedure:

1. Adjust with VR301 so that the 38 kHz signal leakage becomes minimum.



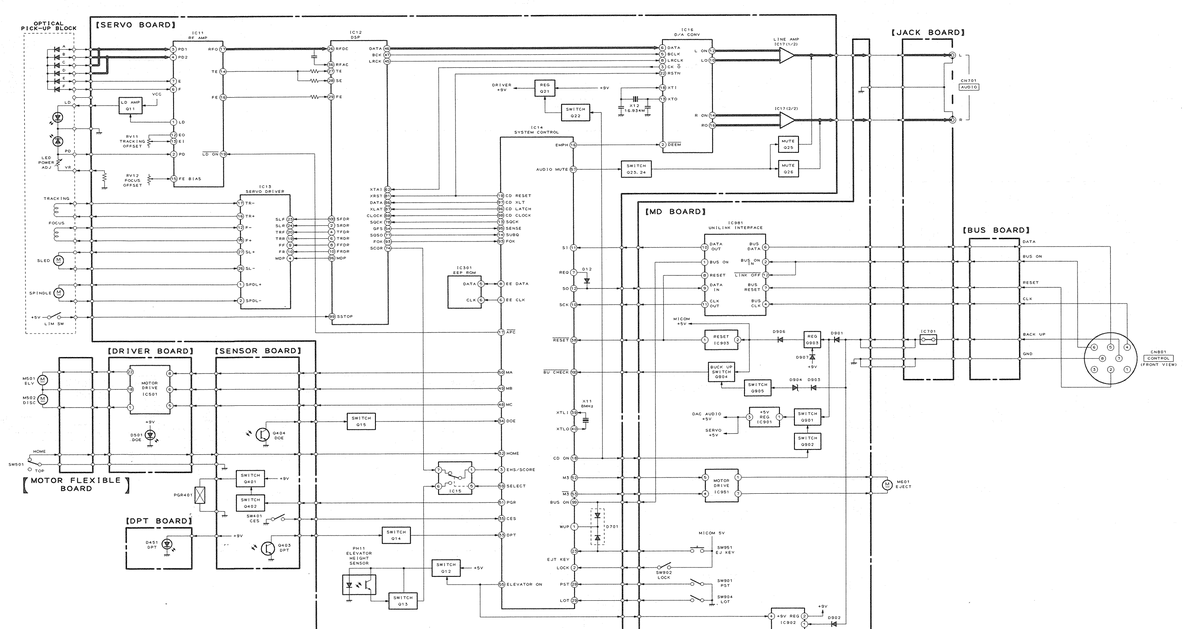
Adjustment Location:

HIDEAWAY BOARD – *Component Side* –

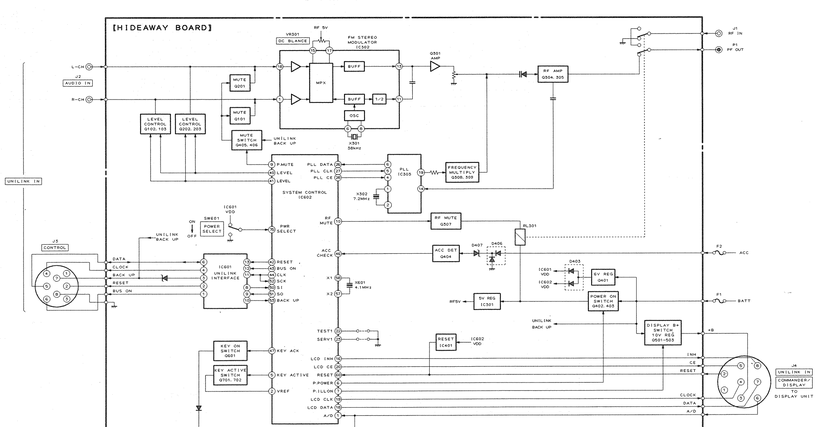


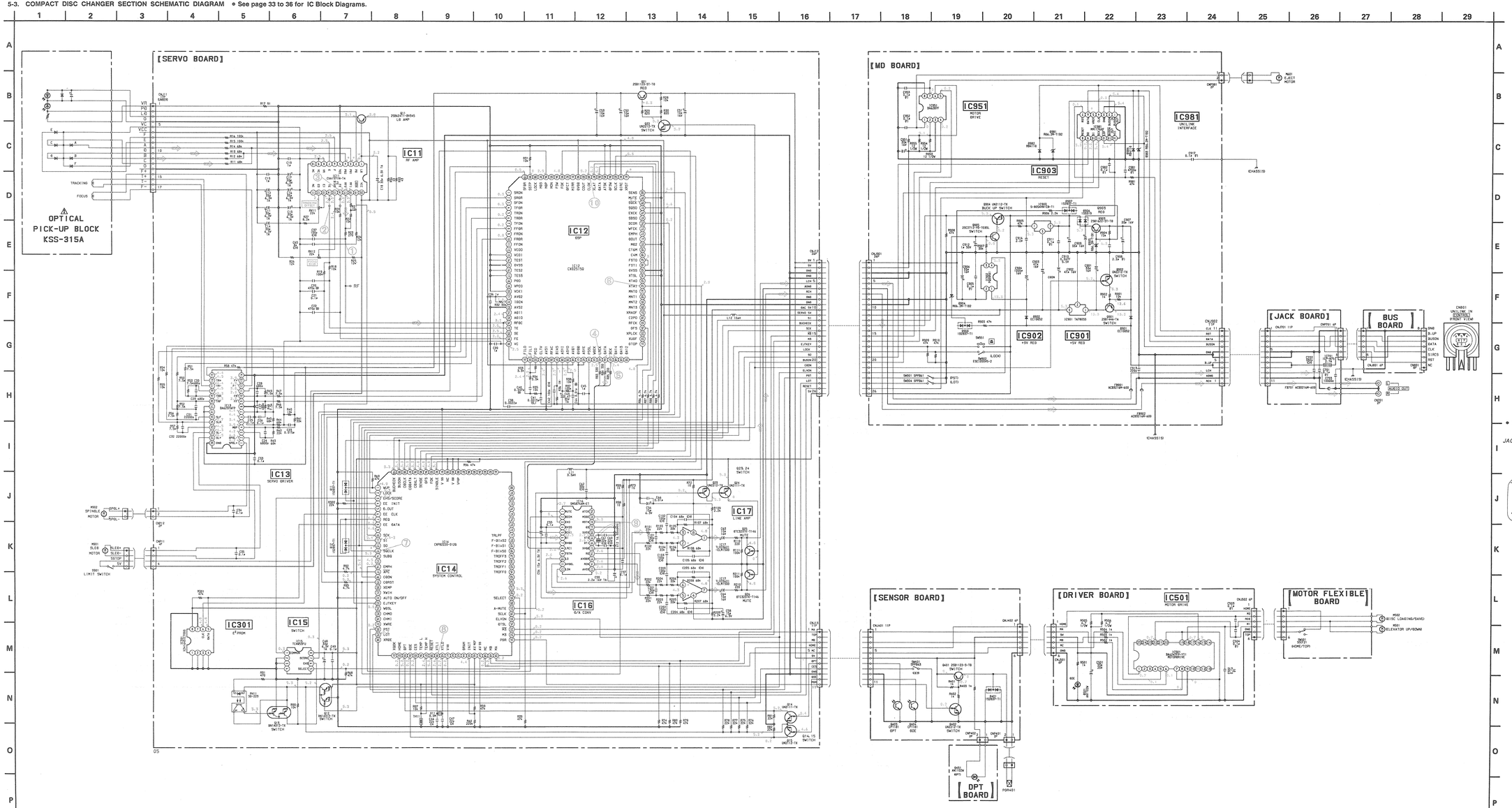
SECTION 5
DIAGRAMS

5-1. COMPACT DISC CHANGER SECTION BLOCK DIAGRAM

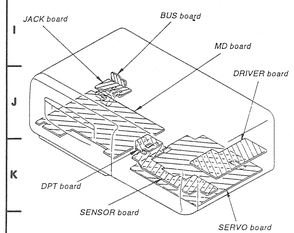


5-2. HIDEAWAY SECTION BLOCK DIAGRAM





• Circuit Boards Location



Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- : panel designation.
- : B-9 Line.
- : adjustment for repair.
- Power voltage is fed from the CD changer controller.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (10 MΩ/V). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path. ⇨ : CD

Note on Printed Wiring Board:

- o——o : parts extracted from the component side.
- ● : Through hole.
- : Pattern of the rear side.
- : Pattern from the side which enables seeing.

5-5. HIDEAWAY SECTION PRNTED WIRING BOARD AND SCHEMATIC DIAGRAM

• See page 36, 37 for IC Block Diagrams.

• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D301	A-10	Q101	C-11
D302	B-9	Q102	C-13
D303	D-8	Q103	C-1
D401	I-8	Q201	C-12
D402	H-10	Q202	C-13
D403	H-10	Q203	C-1
D404	E-10	Q301	B-3
D405	C-3	Q303	E-9
D406	J-9	Q304	E-8
D407	I-9	Q305	E-8
D408	H-8	Q306	E-9
D501	F-9	Q307	B-9
D502	H-12	Q308	D-9
D503	J-12	Q309	D-9
D504	J-11	Q401	H-11
D505	H-12	Q402	F-10
D506	J-10	Q403	F-10
D507	J-11	Q404	E-4
D508	H-1	Q405	F-11
D601	G-12	Q406	F-11
D602	G-12	Q407	I-10
D603	F-11	Q408	H-10
D604	F-12	Q409	H-9
D605	F-11	Q412	H-9
D606	F-11	Q501	G-9
D607	B-13	Q502	G-9
D608	B-13	Q503	F-8
		Q601	F-11
IC101	D-11	Q701	H-6
IC301	A-5	Q702	H-5
IC302	B-2		
IC303	E-6		
IC401	H-3		
IC501	F-3		
IC602	G-4		

Note on Printed Wiring Board:

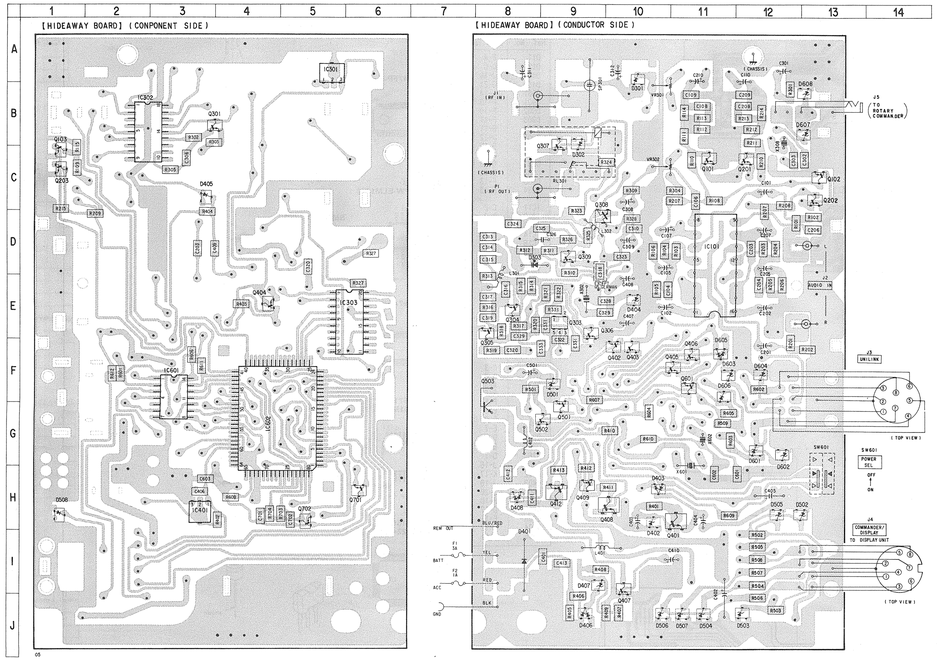
- ○——— : parts extracted from the component side.
- ● : Through hole.
- ▨ : Pattern from the side which enables seeing.

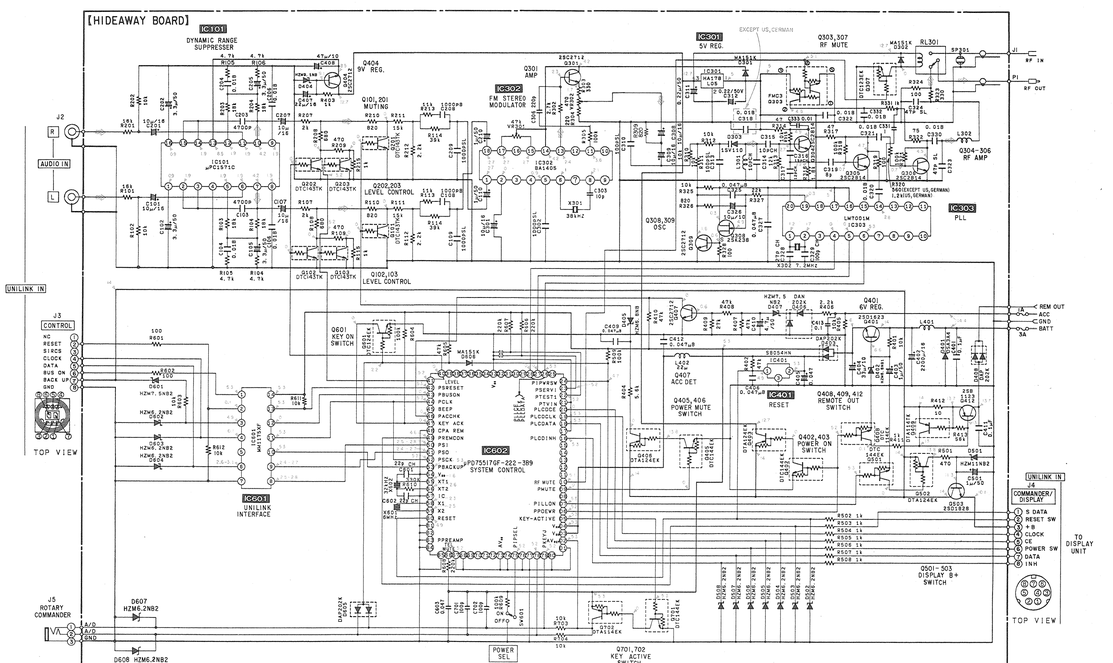
(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

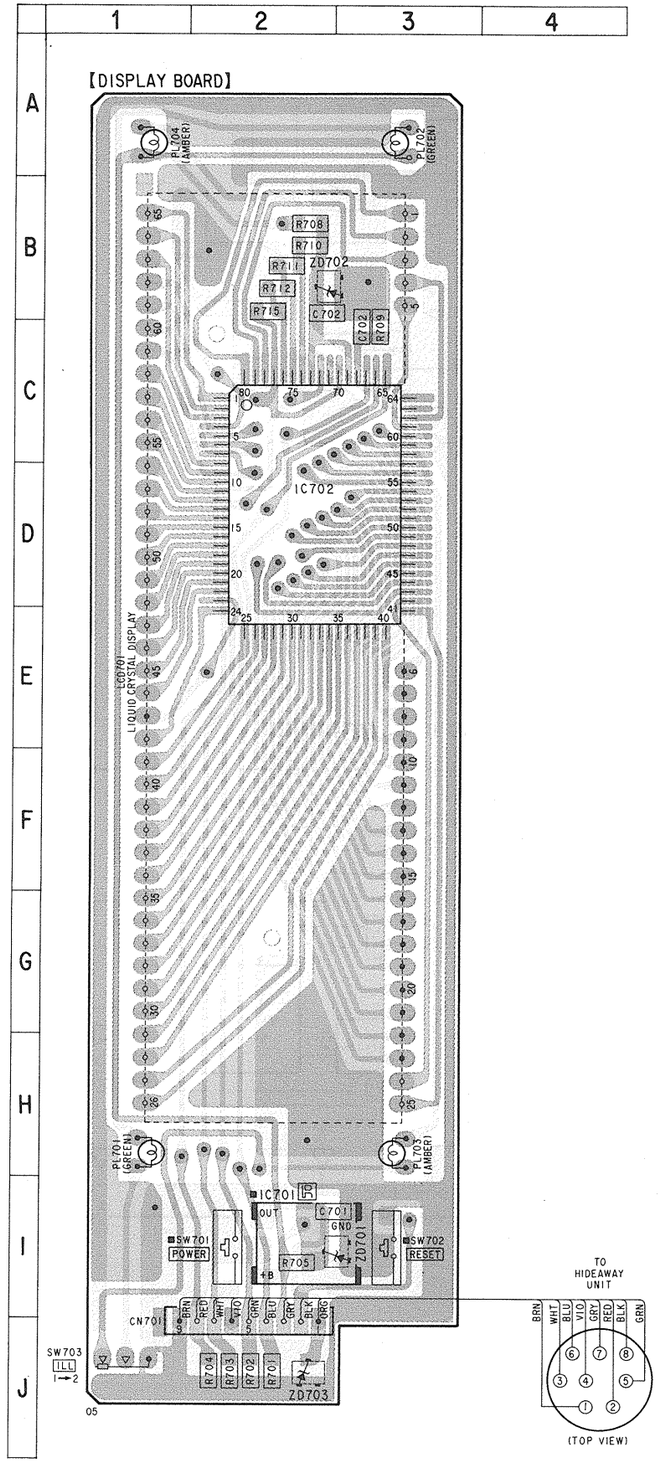
Note on Schematic Diagram:

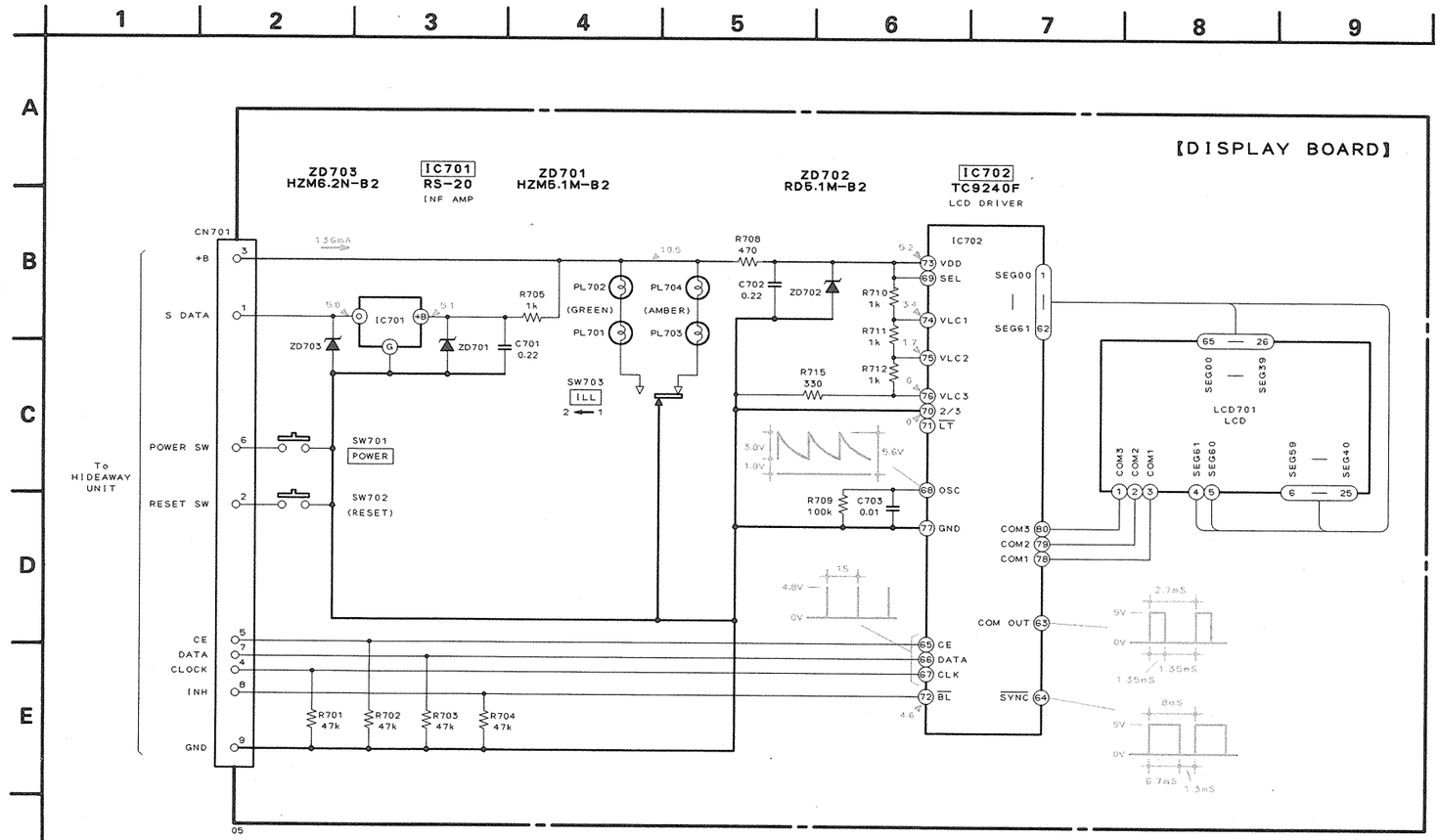
- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- ▭ : panel designation.
- Power voltage is dc 14.4 V and fed with regulated dc power supply from BATT and ACC terminals.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (10 MΩ/V). Voltage variations may be noted due to normal production tolerances.
- Signal path. ⇨ : CD





5-6. DISPLAY SECTION PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM





● Semiconductor Location

Ref. No.	Location
IC701	I-2
IC702	D-2
ZD701	I-3
ZD702	B-2
ZD703	J-2

Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- ▭ : B + Line.
- ▭ : panel designation.
- Power voltage is dc 14.4 V and fed with regulated dc power supply from BATT and ACC terminals.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (10 MΩ/V).
  Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
  Voltage variations may be noted due to normal production tolerances.

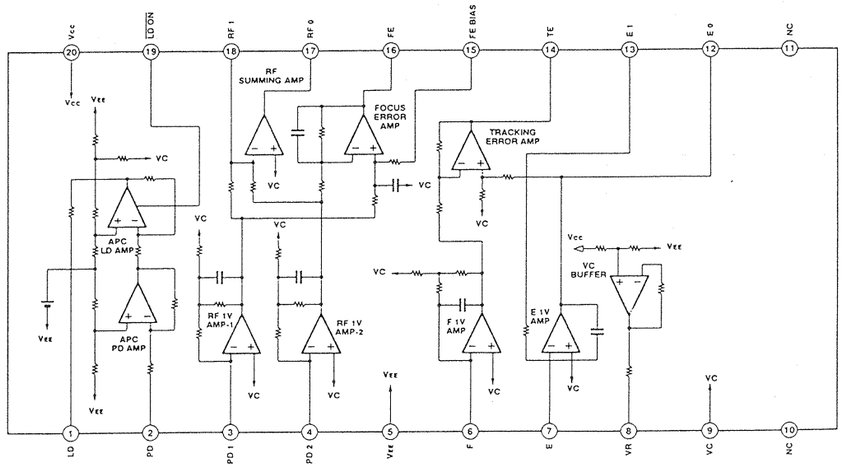
Note on Printed Wiring Board:

- ○——— : parts extracted from the component side.
- ▩ : parts mounted on the conductor side.
- ◉ : Through hole.
- ▨ : Pattern of the rear side.
- ▩ : Pattern from the side which enables seeing.

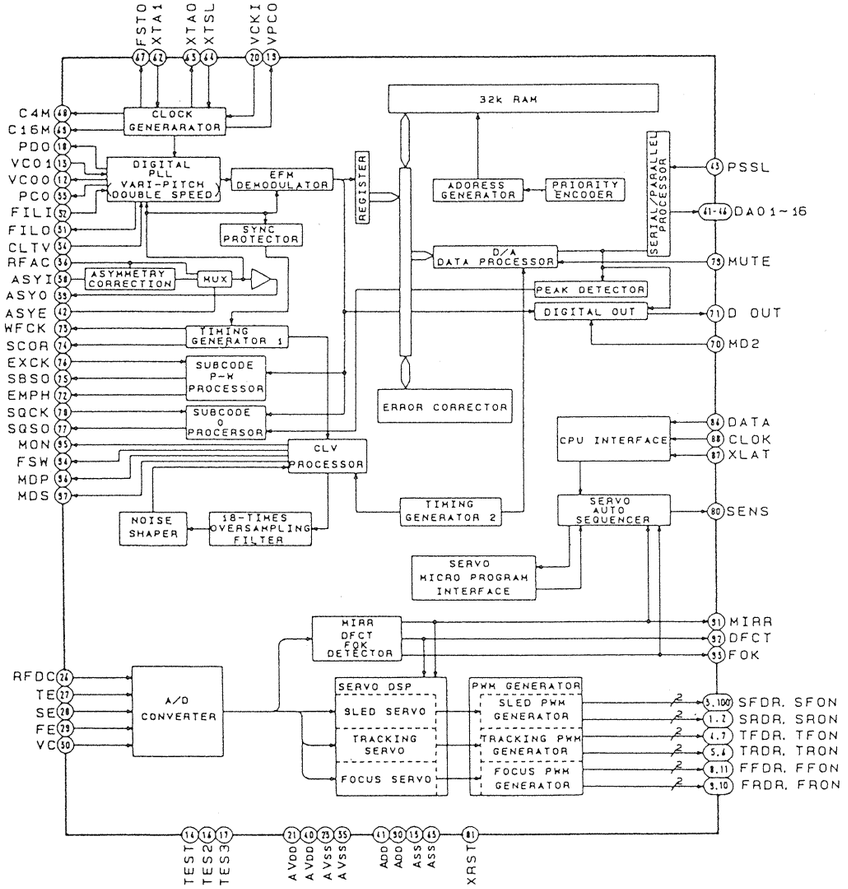
● IC Block Diagrams

[COMPACT DISC CHANGER SECTION]

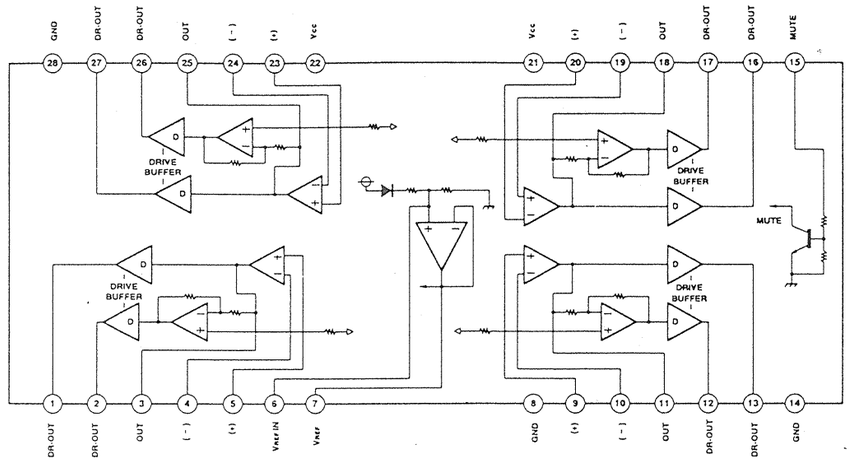
IC11 CXA1571N



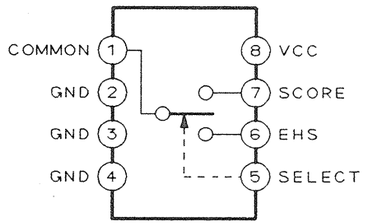
IC12 CXD2515Q



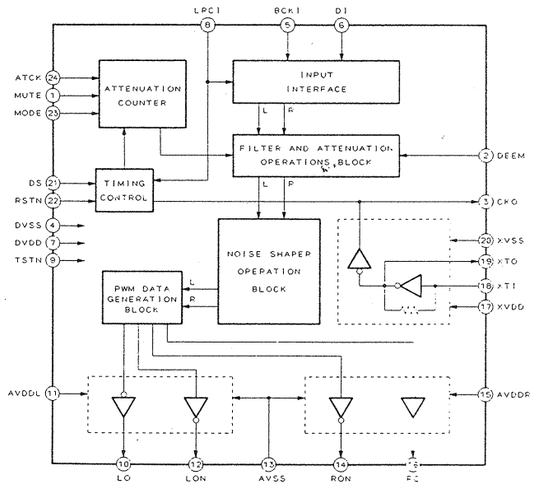
IC13 BA6297AFP



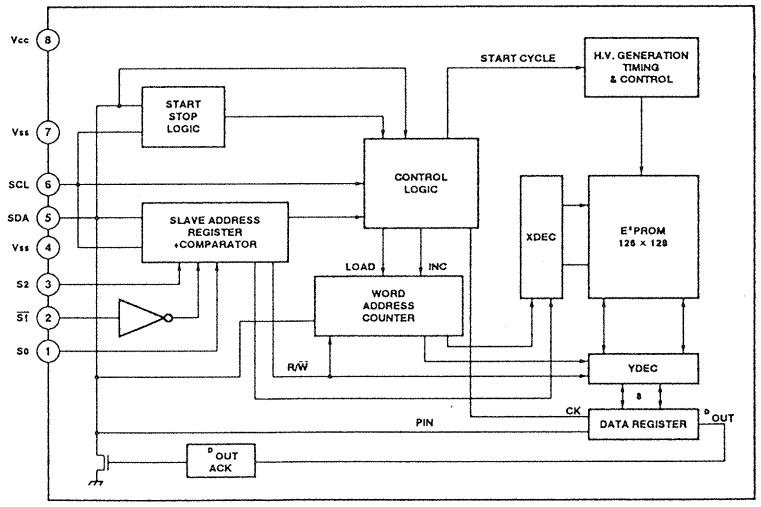
IC15 TC4W53FU



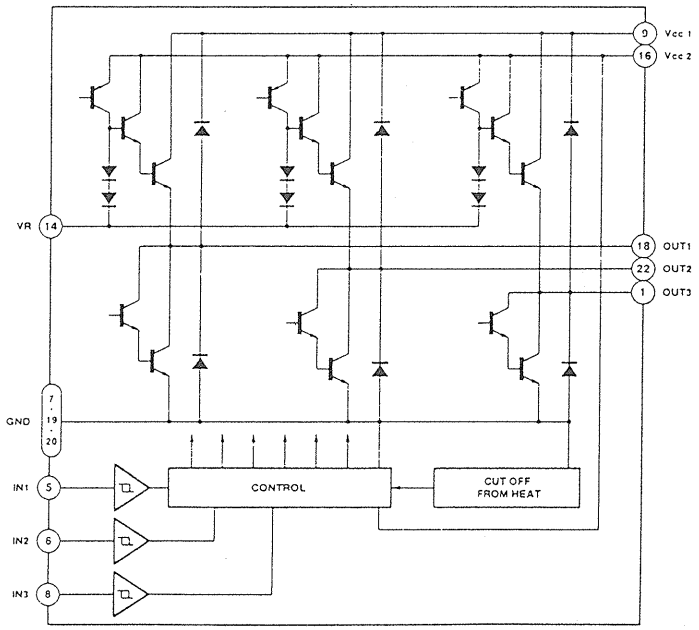
IC16 SM5874AM-ET



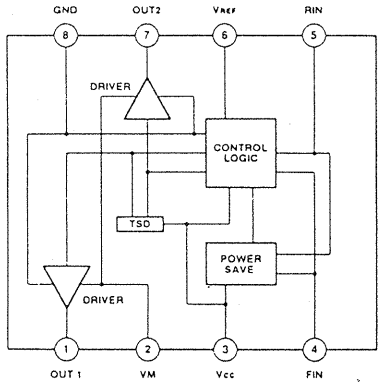
IC301 X24164SIC7000



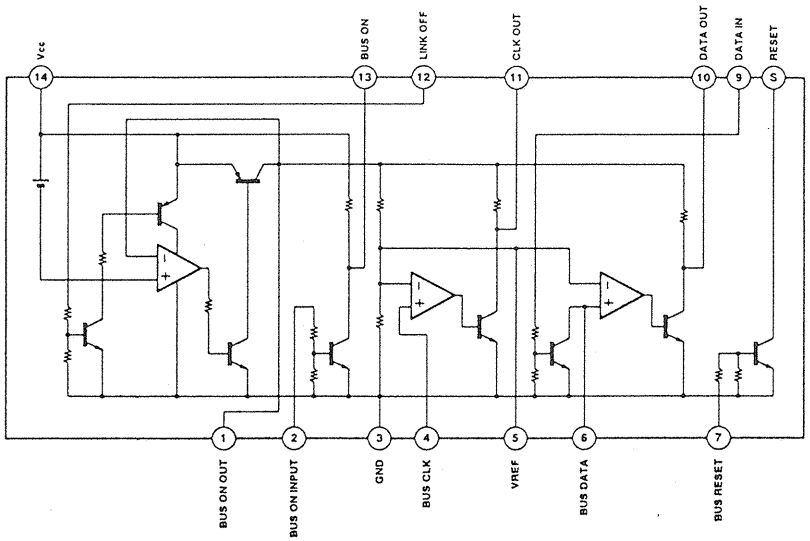
IC501 BA6247FP-Y



IC951 BA6287F

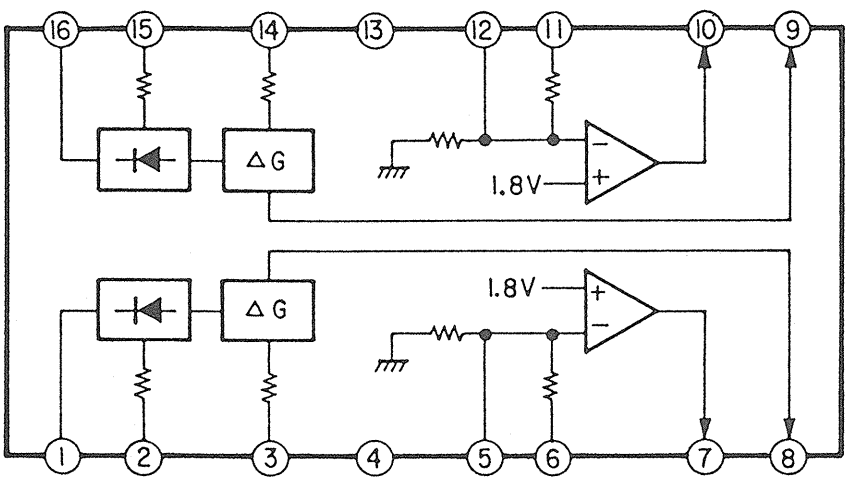


IC981 MM1176XFF

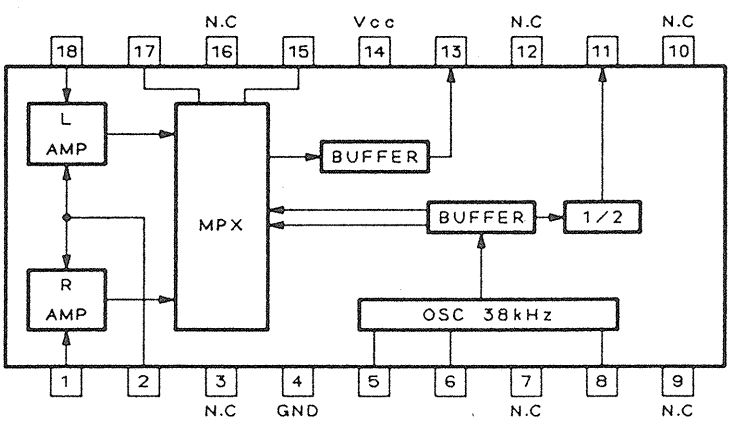


[HIDEAWAY SECTION]

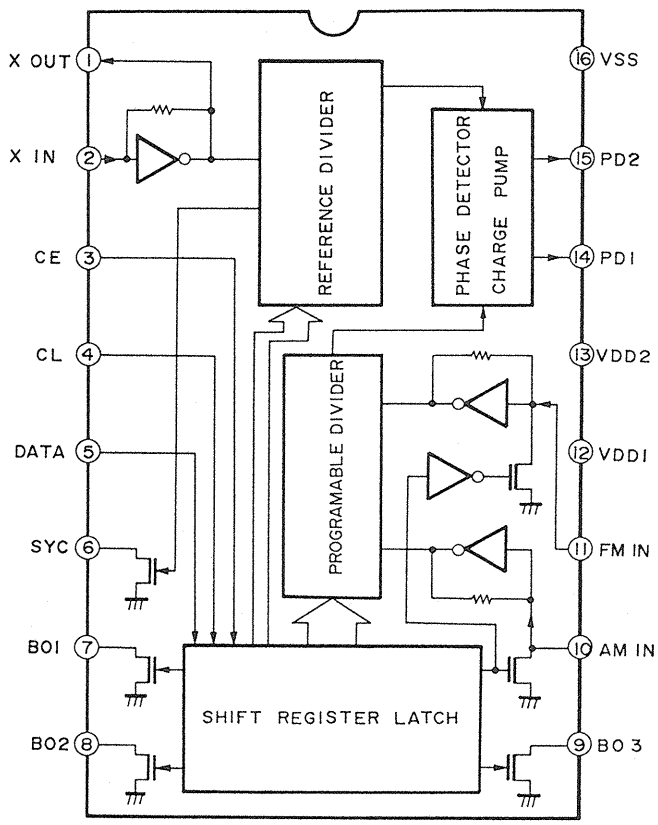
IC101 μPC1571C



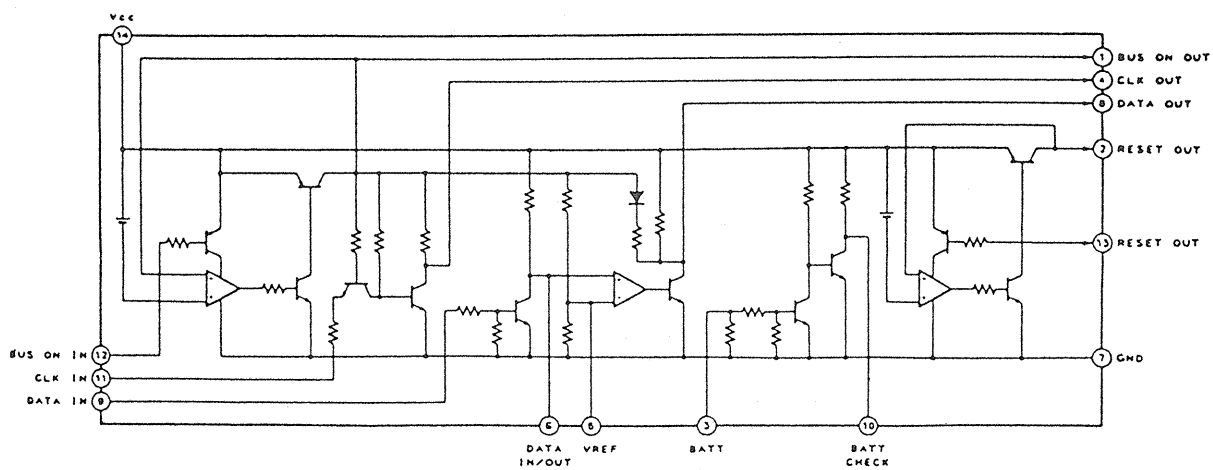
IC302 BA1405F



IC303 LM7001M



IC601 MM1176XF



5-7. IC PIN FUNCTION DESCRIPTION

SERVO BOARD IC14 CXP82224-015Q

Pin No.	Pin Name	I/O	Description
1	WUP	I	External event input terminal of timer/counter.
2	LOCK	I	"H" when the magazine is locked.
3	EHS/SCORE	I	This terminal detects the height of SCOR/elevator of DSP.
4	EEINIT	I	Input terminal of remote commander reception circuit.
5	D. OUT	I	Not used for this unit.
6	EECLK	O	Output terminal of 14 bit PWM.
7	REQ	O	Monomorphic wave output terminal of 16 bit timer/counter. CTL duty detection output. Dividing output terminal of 32KHz oscillation.
8	EEDATA	I/O	External capture input terminal of 16 bit timer/counter.
9	NC	–	Chip select input terminal of serial interface. Not used for this unit.
10	SCK	I	Input terminal of serial clock.
11	SI	I	Input terminal of serial data.
12	SO	O	Output terminal of serial data.
13	SQCLK	O	Output terminal to clock. SQ to DSP.
14	SUBQ	I	Input terminal of SUQB.
15	NC	–	Output terminal of serial data. Not used for this unit.
16	EMPH	O	Emphasis control output terminal.
17	$\overline{APC}$	O	Laser ON/OFF control terminal. "L" : Laser ON
18	CDON	O	Servo system power ON/OFF, "H" : ON
19	CDRST	O	RESET terminal of servo system. "L" : RESET
20	XEMP	I	Not used
21	XWIH	I	Not used
22	AUTO ON/OFF	I	ON/OFF input for FOCUS BIAS and TRACKING OFFSET automatic adjustment. "L" : OFF "H" : ON
23	EJT KEY	I	EJECT KEY input terminal. "H" : ON
24	WDSL	O	Not used
25	CHM0	O	Not used
26	CHM1	O	Not used
27	XWRE	O	Not used
28	RST	I	PST sensor input terminal.
29	LOT	I	LOT sensor input terminal.
30	XRDE	O	Not used
31	XQOK	O	Not used
32	HOME	I	HOME sensor input terminal.
33	DPT	I	DPT sensor input terminal.
34	DOE	I	DOE sensor input terminal. "L" : when DISC is on the pickup.
35	CES	I	CES sensor input terminal. "L" : when DISC has completed chucking.
36	TEMP L	–	Not used for this unit.
37	TEMP H	I	Detects the high temperature (For servo gain compensation.)
38	$\overline{RESET}$	I	System reset terminal of "L" level active.
39	XTLI	I	System clock input terminal.
40	XTLO	O	System clock output terminal.

Pin No.	Pin Name	I/O	Description
41	Vss	–	GND terminal.
42	NC	–	Not used for this unit.
43	NC	–	Not used for this unit.
44	DRAM	I	Not used
45	INIT	I	INIT terminal.
46	AVREF	I	Standard voltage input terminal of A/D converter.
47	AVss	–	GND terminal of A/D converter.
48	MC	O	Motor control terminal (M501, M502)
49	MB	O	Motor control terminal (M501, M502)
50	MA	O	Motor control terminal (M501, M502)
51	PGR	O	Plunger control terminal.
52	M3	O	EJECT motor control terminal (M601)
53	$\overline{M3}$	O	EJECT motor control terminal (M601)
54	DTSL	O	Not used
55	ELVON	O	Elevator U/D, sensor power ON/OFF control terminal.
56	SCLK	O	Serial communication clock output terminal.
57	A-MUTE	O	MUTE of audio output.
58	NC	–	Not used for this unit.
59	SELECT	O	EHS/SCOR SELECT terminal.
60	NC	–	Not used for this unit.
61	NC	O	CLD output terminal.
62	NC	O	CK output terminal.
63	NC	O	CD output terminal.
64	TROFF0	–	Not used for this unit.
65	TROFF1	–	Not used for this unit.
66	TROFF2	–	Not used for this unit.
67	TROFF3	–	Not used for this unit.
68	F-BIAS0	–	Not used for this unit.
69	F-BIAS1	–	Not used for this unit.
70	F-BIAS2	–	Not used for this unit.
71	TR -LPF	–	Not used for this unit.
72	NC	–	Not used for this unit.
73	NC	–	Not used for this unit.
74	NC	–	Not used for this unit.
75	NC	–	Not used for this unit.
76	NC	–	Not used for this unit.
77	NC	–	Not used for this unit.
78	NC	–	Not used for this unit.
79	NC	–	Not used for this unit.
80	NC	–	Not used for this unit.

Pin No.	Pin Name	I/O	description
81	NC	–	Not used for this unit.
82	NC	–	Not used for this unit.
83	NC	–	Not used for this unit.
84	NC	–	Not used for this unit.
85	NC	–	Not used for this unit.
86	NC	–	Not used for this unit.
87	NC	–	Not used for this unit.
88	VFDP	–	Voltage supply terminal for EDP when a built-in resistor has been specified by mask option.
89	V_{DD}		Positive power supply terminal.
90	NC	–	NC terminal. This terminal is connected with V_{DD} in normal operation.
91	Vss	–	GND terminal.
92	SINGLE	I	Not used for this unit.
93	FOK	I	FOK input terminal of DSP.
94	GFS	I	GFS input terminal of DSP.
95	SENSE	I	SENSE input terminal of DSP.
96	CDXLT	O	Control output terminal of servo system.
97	CDDATA	O	Control output terminal of servo system.
98	CDCLK	O	Control output terminal of servo system.
99	BUSON	I	"L" when the controller is communicating.
100	BUCHECK	I	BACK-UP detection. "H" : BACK-UP ON

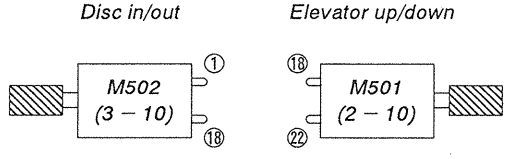
(DRIVER BOARD) IC501 (BA6247FP-Y) MOTOR DRIVER IC OPERATION

The elevator motor connected between Pin ② and Pin ⑩ of IC501 is as M501, and the disc loading/saving motor connected between Pin ③ and Pin ⑩ of IC501 is as M502.
When the IC port logic is Pin ② > Pin ⑩, Pin ③ > Pin ⑩, the rotating direction of M501 and M502 becomes normal.

ROTATION TRUTH TABLE

① When MB = MC, both M501 and M502 are stop. (MA value is free.)
② When MB ≠ MC:

MA Pin ⑧	MB Pin ⑥	MC Pin ⑤	M501	M502	Motor Terminal			Operation
					㉒	①	⑱	
L	L	H	Reverse	Stop	L	OPEN	H	Elevator UP
H	L	H	Normal	Stop	H	OPEN	L	Elevator DOWN
L	H	L	Stop	Reverse	OPEN	L	H	Disc load
H	H	L	Stop	Normal	OPEN	H	L	Disc save



HIDEAWAY BOARD IC602 μPD75517GF-222-3B9

Pin No.	Port No.	Port Name	(I/O)	Description
1	AN0	KEY	I	AD BUTTON INPUT
2	AV_{REF}		–	REFERENCE POWER SUPPLY
3	V_{DD}		–	POWER SUPPLY
4	V_{DD}		–	POWER SUPPLY
5	P113	KEY ACTIVE	O	POWER ON/$\overline{OFF}$ FOR AD BUTTON
6	P112	POWER	O	USED FOR REMOTE OUT
7	P111	ILLUMI	O	POWER SUPPLY ON/$\overline{OFF}$ TO DISPLAY UNIT
8	P110	COLOR	O	COLOR SELECTION PORT $\overline{AMBER}$/GREEN (OPEN)
9	P103	MUTE	O	MUTE PORT ON/$\overline{OFF}$ ON SOURCE SELECTION
10	P102	RF MUTE	O	RF MUTE
11	P101		O	NOT USED. (OPEN)
12	P100		O	NOT USED. (OPEN)
13	P93	REM_ANT	O	OUTPUT PORT FOR REMOTE ANTENNA (OPEN)
14	P92		O	NOT USED. (OPEN)
15	P91		O	NOT USED. (OPEN)
16	P90	LCD INH	O	INH FOR LCD
17			I	NOT USED. (OPEN)
18	SO1	LCD DATA	O	DATA FOR LCD
19	$\overline{SCK1}$	LCD CLK	O	CLOCK FOR LCD
20	PPO	LD CE	O	CE FOR LCD
21	P73	REP-KEY	I	$\overline{THERE\ IS\ REP\text{-}KEY}$/NOT INITIAL IN ($V_{DD}$)
22	P72	PTEST1	I	TEST MODE INITIAL IN $\overline{NOR}$/TEST
23	P71	RSERV1	I	SERVICE MODE INITIAL IN $\overline{NOR}$/TEST
24	P70	MATCH	I	NOT USED. (GND)
25	P63		O	NOT USED. (OPEN)
26	P62	PLL DATA	O	PLL DATA
27	P61	PLL CLK	O	PLL CLK
28	P60	PLL CE	O	PLL CE
29	P53		O	NOT USED. (OPEN)
30	P52		O	NOT USED. (OPEN)
31	P51		O	NOT USED. (OPEN)
32	P50		O	NOT USED. (OPEN)
33	V_{SS}		–	GND
34	P43		O	NOT USED. (OPEN)
35	P42		O	NOT USED. (OPEN)
36	P41		O	NOT USED. (OPEN)
37	P40		O	NOT USED. (OPEN)
38	P33		O	NOT USED. (OPEN)
39	P32		O	NOT USED. (OPEN)
40	P31	LEVEL	O	OUTPUT LEVEL SELECT

Pin No.	Port No.	Port Name	(I/O)	Description
41	P30	LEVEL	O	OUTPUT LEVEL SELECT
42	P23	RESET OUT	O	UNI LINK RESET PORT
43	P22	$\overline{\text{BUS ON}}$	O	UNI LINK BUS ON
44	P21	SCLK OUT	O	UNI LINK CLK OUT
45	P20	BEEP	O	BEEP (KEY ON BEEP) OUT (OPEN)
46	P13	ACC CHECK	I	ACC CHECK IN
47	P12	KEY ACK	I	AID INPUT BUTTON ON: HIGH
48	P11	CAS_REM	I	CASSETE REMOTE IN (GND)
49	P10	SIRCS	I	SIRCS INPUT FOR REMOTE COMMANDER RECEIVER
50	SI0	SI	I	UNI LINK DATA IN
51	SO0	SO	O	UNI LINK DATA OUT
52	$\overline{\text{SLK0}}$	SCLK IN	I	UNI LINK CLK IN
53	P00	B.U CK	I	PORT FOR BACK-UP CHECK
54	Vss		–	GND
55	XT1		O	CLOCK OUT (32kHz)
56	XT2		I	CLOCK IN (32kHz)
57	IC		I	(GND)
58	X1		O	CLOCK OUT (4.19 MHz)
59	X2		I	CLOCK IN (4.19 MHz)
60	RESET		I	RESET IN
61	P143		I	NOT USED. (OPEN)
62	P142		I	NOT USED. (OPEN)
63	P141		I	NOT USED. (GND)
64	P140		I	NOT USED. (GND)
65	P133		I	NOT USED. (GND)
66	P132	$\overline{\text{TEL MUTE}}$	I	TELEPHONE MUTE (V_{DD})
67	P131		I	NOT USED. (GND)
68	P130		I	NOT USED. (GND)
69	P123		O	NOT USED. (OPEN)
70	P122		O	NOT USED. (OPEN)
71	P121		O	NOT USED. (OPEN)
72	P120		O	NOT USED. (OPEN)
73	AVss		–	GND
74	P153		I	NOT USED. (GND)
75	P152	P/S SW	I	POWER SELECT SW $\overline{\text{THERE IS ACC}}$/NOT
76	P151		I	NOT USED. (GND)
77	P150		I	NOT USED. (GND)
78	AN3		I	NOT USED. (GND)
79	AN2		I	NOT USED. (GND)
80	AN1		I	NOT USED. (GND)

CDX-65/65RF

SONY
SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
E Model

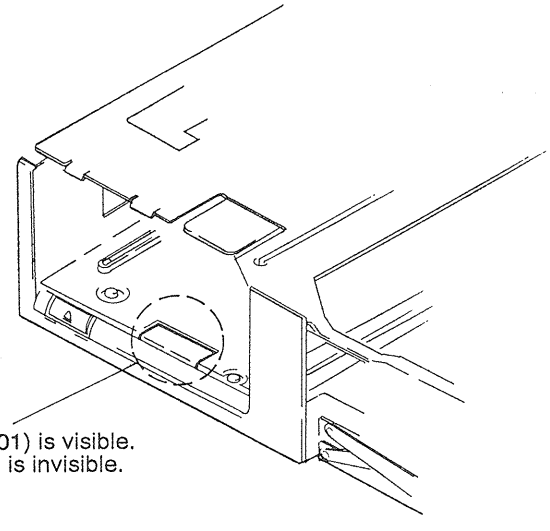
SUPPLEMENT-1

File this supplement with the service manual.

Subject:
1. **Correction**
2. **Hideaway Board Modification**
3. **Mechanism Deck Modification (Serial No. 500,001 and later)**

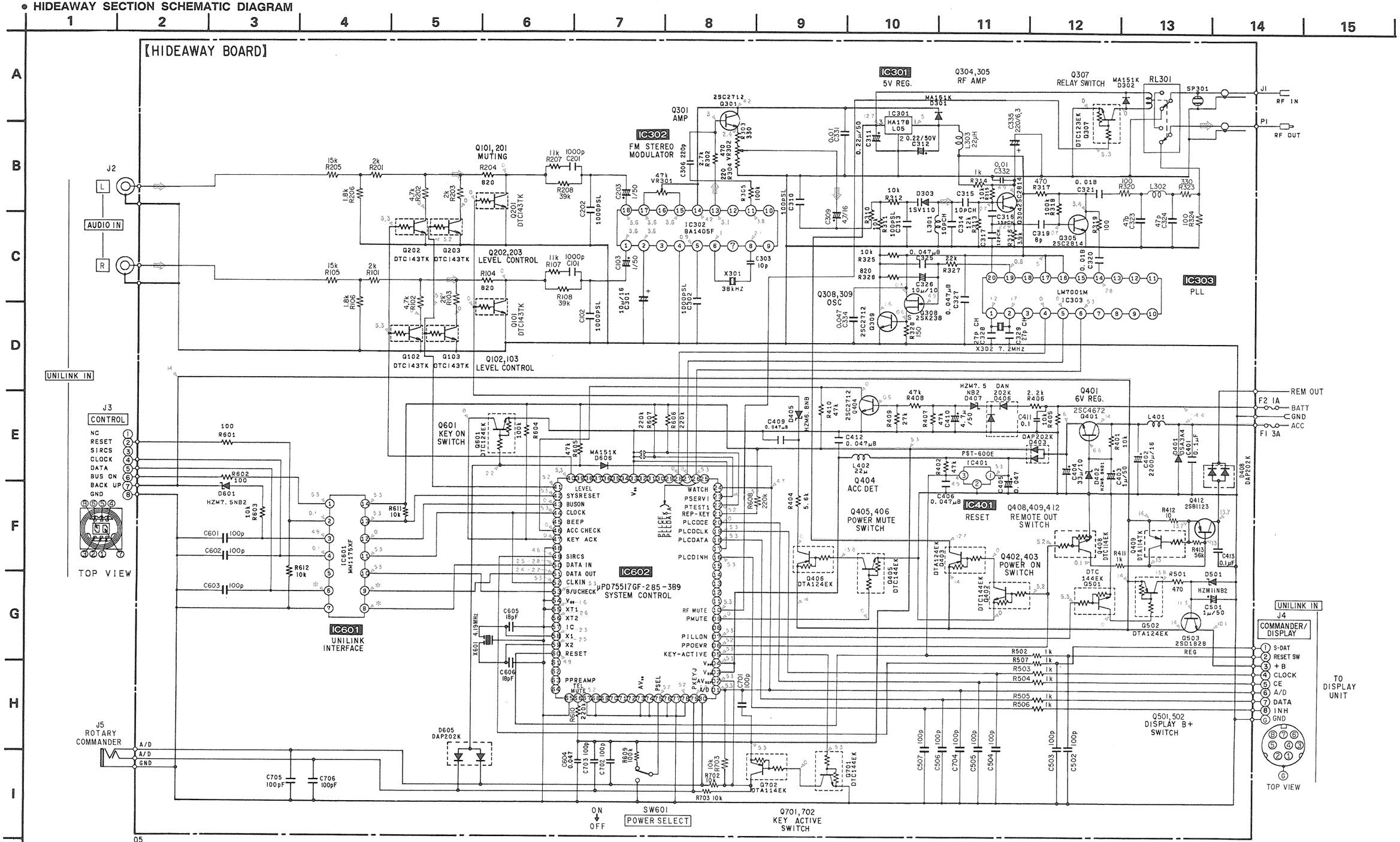
The hideaway board (CDX-65RF) and the mechanism deck have been changed in the midst of production.
This supplement contains only the changed informations.
There is no interchangeability between the new type mechanism deck and the former type.
For the informations about the former type mechanism deck, please refer to the CDX-65/65RF service manual (9-959-294-11) previously issued.

- **New type discrimination.**



Former type: The eject motor (M601) is visible.
New type: The eject motor (M601) is invisible.

• HIDEAWAY SECTION SCHEMATIC DIAGRAM



Note :

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- ▭ : B + Line.

- Power voltage is dc 14.4 V and fed with regulated dc power supply from BATT and ACC terminal.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- Voltages are taken with a VOM (10 MΩ/V). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ▨ : CD